

FACT SHEET FOR NPDES PERMIT WA-002235-7 OTHELLO WASTEWATER TREATMENT PLANT

SUMMARY

The City of Othello (population 5,886) owns and operates a facultative lagoon system that discharges to Owl Creek. The permit application states that the estimated total population served by the plant is 6,518 (service area includes the city and Adams County Water District #1). The wastewater treatment plant does not use the chlorine contact chamber for disinfection, but rather adds chlorine granules to the effluent during those periods during the early spring and late fall when migratory waterfowl settle on the lagoons in large numbers. Othello takes effluent fecal counts at more frequent intervals than required in the permit in order to be able to respond with disinfectant in a timely manner to any increase in fecal numbers.

Since the facility has not changed significantly since the last permit was issued, the current permit will keep the original technology based limits that are listed in the previous permit. This permit will increase the monitoring requirements for the effluent, Owl Creek (receiving water), and groundwater in order to better characterize the treatment plant impacts to surface and groundwater. The previous NPDES Permit stated that WET testing will be required for this current (2004 to 2008) permit period since the last WET testing was done during the effluent characterization in January 1993 or two permit cycles ago.

The permit will be issued for four years and will expire on June 30, 2008, to allow the City of Othello adequate time to collect and analyze data on the collection system, treatment plant effluent, and the receiving water, Owl Creek.

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has authorized the State of Washington to administer the NPDES permit program. Chapter 90.48 RCW defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the State include procedures for issuing permits (Chapter 173-220 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant	City of Othello
Facility Name and Address	City of Othello Wastewater Treatment Plant 500 East Main Street, Othello, WA 99344
Type of Treatment:	Facultative Lagoons
Discharge Location	Owl Creek Latitude: 46° 49' 48" N Longitude: 119° 13' 38" W.
Water Body ID Number	#WA-41-1010

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

The City of Othello is located in the southwest corner of Adams County in the northwest quadrant of the intersection of State Highways 17 and 26. Othello is about 20 miles south of Moses Lake, 45 miles north of Pasco and about 130 miles southwest of Spokane. The city is located in the Columbia Basin area. The climate is very dry with the city receiving an average of approximately 8 inches of precipitation per year. The central part of the City of Othello lies between 1,000 and 1,100 feet in elevation. The elevation of the wastewater treatment plant property is between 850 and 900 feet.

The Othello wastewater treatment plant is two miles west of Othello on the west end of Cunningham Road. The facility has not significantly changed since the last permit was issued.

HISTORY

Othello constructed their first wastewater treatment plant in 1955 just west of the city on Main Street. This plant was primary treatment only and reached facility overload in the early 1960s. The present lagoon system was built in 1963 with two cells totaling 20 acres. This plant was originally built to handle the food processing waste from Othello Packers but by 1968 the facility was near capacity. Othello stopped accepting food processing waste in 1969.

The last major facility expansion occurred in 1981. Othello obtained EPA funding to construct two primary lagoons to add to an existing three lagoon system. Due to seepage observed along the outward toe of the lagoon dikes on multiple sides, the City built a barrier within the dikes in 1984. Othello dug a trench along the middle of the dikes that they then filled with bentonite slurry. The City also installed 14 piezometers along the perimeter of the two primary lagoons to monitor the effectiveness of the barriers. A collection and pump-back system was installed to intercept any seepage that leaked beyond the dike barriers. In addition to this system, Othello installed up gradient and down gradient groundwater monitoring wells to provide better groundwater data.

In May 1992 the combination concrete-lined open channel and steel culvert to take the effluent from the polishing pond to Owl Creek was replaced with an earth covered 18-inch PVC pipe.

TREATMENT PROCESSES

The wastewater is gravity fed to the headworks where the influent flow is measured at a 12" Parshall flume by an ultrasonic flow meter. Flow from the headworks is equally split to one of the earthen dike primary lagoons. The primary lagoons have a combined surface area of 50 acres and provide 48 days of retention time at average flow rates. The discharge from the primary lagoons flows over a stair-step cascade aerator to the secondary lagoons, which operate in series. These lagoons are 9 acres in size and provide a detention time of 14 days at average flow. Recirculation pumps located at the headworks building can return all the flow back to the primary lagoons if necessary. The secondary lagoons discharge to the polishing pond.

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The water discharged from the polishing pond flow through chlorine contact chambers then is discharged to Owl Creek through an 18" PVC pipe. The chlorine contact chambers are not currently used for disinfection since fecal coliform numbers have generally been within the permitted limits. Granular chlorine is added to the effluent when numerous migratory waterfowl settle on the lagoons and raise the fecal counts.

The Othello wastewater treatment plant does not have any significant industrial users discharging to the plant. The plant is a Class I facility since it is a non-aerated lagoon treatment. The current Othello wastewater treatment plant operator certifications are: Genna Dorow with a Group 4 certification and Chris Hare with a Group 2 certification. Issues that the City of Othello is in the process of considering for the wastewater treatment plant and collection system include:

- Establishing a general sewer plan which would include an infiltration and inflow (I&I) program and a system evaluation.
- Evaluating the source and reason for the large increase in the influent flow and loading during the late summer and fall.

DISCHARGE OUTFALL

Secondary treated (and intermittently disinfected) effluent is discharged from the facility via an 18-inch PVC into Owl Creek.

RESIDUAL SOLIDS

Any solids removed during the treatment of the wastewater at the headworks (grit and screenings) in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the collection system or equipment that do not meet the minimal requirements for land application will be drained and disposed of as solid waste at the local landfill in a manner acceptable to the Adams County Health Department.

Any biosolids removed from the lagoons will be handled and disposed of in a manner that complies with the requirements of the Washington State Department of Ecology Biosolids Permit (WAC 173-308).

PERMIT STATUS

The previous permit for this facility was issued on July 9, 1998, expired and was administratively extended on June 30, 2001. The previous permit placed effluent limitations on 5-day Biochemical Oxygen Demand (BOD₅), Total Suspended Solids (TSS), pH, Fecal Coliform bacteria, and residual chlorine.

An application for permit renewal was submitted to the Department on June 15, 2001 and accepted by the Department on September 14, 2001.

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SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility received its last inspection, a Class 1 inspection, on May 1, 2003. The inspection found the facility to be in general compliance with the permit limits. The DMR records for the years 2000 through 2002 show a large increase in the influent flow during the normally dry season - the late summer and fall months. The peak period for monthly average influent flow (July through October) has shown a trend of increasing peaks each year: the peak month in 2000 was September with a flow of 1.84 MGD, the peak month in 2001 was July with a flow of 4.78 MGD and the peak flow for 2002 was 10.9 MGD in September.

During the history of the previous permit, the Permittee has remained generally in compliance, based on Discharge Monitoring Reports (DMRs) submitted to the Department and inspections conducted by the Department. There were 15 violations of pH monthly average readings exceeding the permit limit (pH >9) during the 37 month period from January 2000 through January 2003. Five BOD percent removal violations (% removal < 85%) and two fecal coliform exceedences (average monthly count > 200cfu/100mL) occurred during this period.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the NPDES application and in discharge monitoring reports. The effluent is characterized as follows:

Table 1: Wastewater Characterization

<u>Parameter</u>	<u>Concentration</u>
Effluent Flow (mgd)	1.007 mgd
BOD (mg/L)	10.42 mg/L – average daily 34.32 mg/L – maximum daily
Total Suspended Solids (mg/L)	12.34 mg/L – average daily 47.67 mg/L – average daily
Fecal Coliform (#/100 ml)	56.10/100 ml – average daily 880.0/100 ml – maximum daily
Ammonia nitrogen (mg/L)	3.65 mg/L – average daily 6.72 mg/L – maximum daily
pH (s.u.)	7.58 to 9.49
Total Kjeldahl Nitrogen (TKN)	12.65 mg/L – average daily 19.50 mg/L – maximum daily
Nitrate plus Nitrite nitrogen	5.28 mg/L – average daily 2.23 mg/L – maximum daily

PROPOSED PERMIT LIMITATIONS

Federal and State regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be

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chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

This permit will keep the original technology-based limits, which were in the previous permit. The limits are based in part on information received in the application. There have been no changes in the facility operations. The lack of receiving water data, in particular the lack of any flow data for Owl Creek, precludes the development of any water quality based limits. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the State of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. Effluent limits are not always developed for pollutants that may be in the discharge but not reported as present in the application. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of Ecology. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

DESIGN CRITERIA

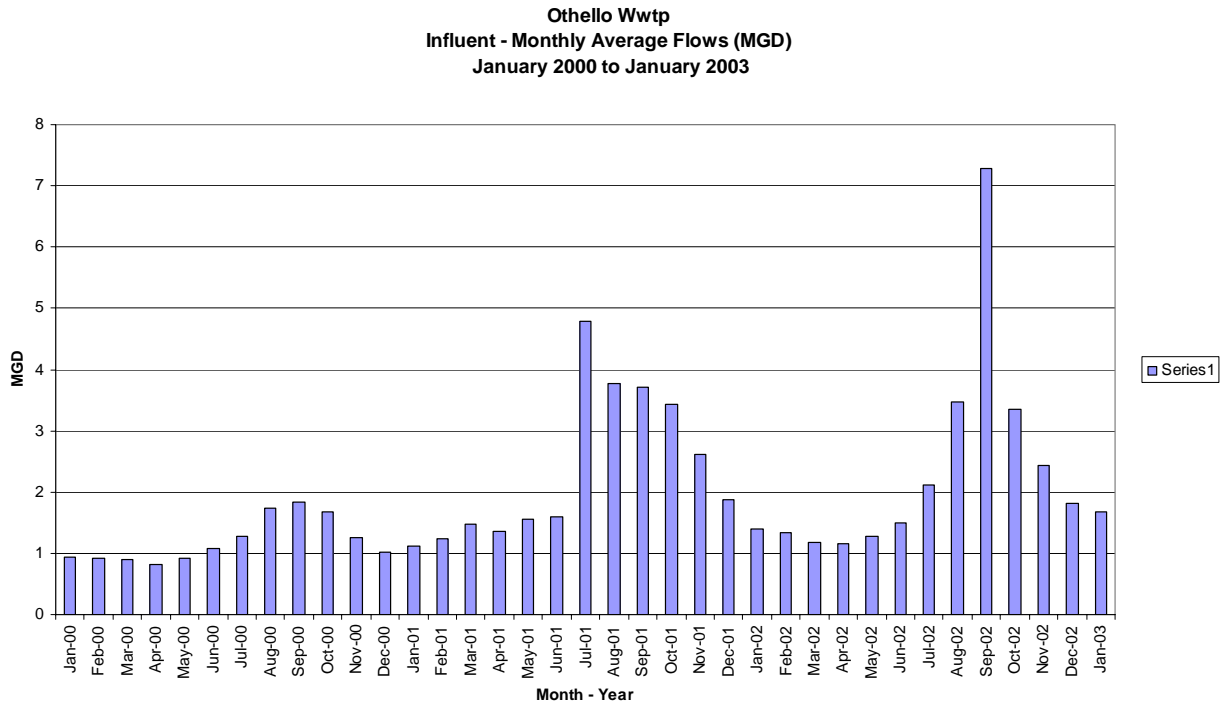
The design criteria for this treatment facility are taken from Sewerage System Facilities Plan for the City of Othello report prepared by Stevens, Thompson & Runyan Engineers and are as follows:

Table 2: Design Standards for Othello WWTP.

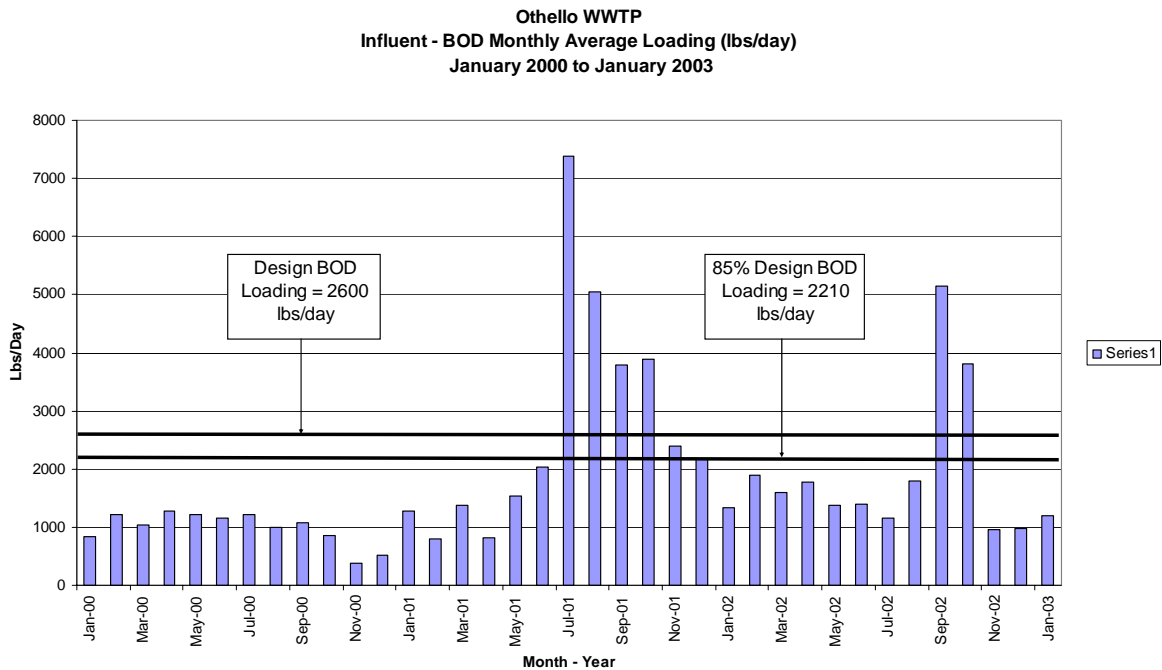
Parameter	Design Quantity
Monthly average dry weather flow	2.0 MGD
Monthly average wet weather flow	7.5 MGD
BOD ₅ influent loading	2600 lb./day
TSS influent loading	2600 lb./day
Design population equivalent	13,000

DMR records for the facility show that influent flows peak during the late Summer and Fall dry season. The Monthly Average flow for the period from January 1999 through January 2003 is 1.845 MGD, which is 92% of the Design Flow. The high influent flow months do not coincide with the wet season months, but rather the influent flow peaks during the months of July through October. Another noticeable trend is the increase in the quantity of flow in each of the succeeding years from 2000 through 2002 (see Influent –Monthly Average Flows chart).

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The influent BOD₅ loading monthly average loading has shown an increase concurrent with the increased influent flow. The BOD₅ design standard for influent loading at the plant is 2600 lbs/day. The loading has increased in 2001 and 2002 during the late summer and fall.



TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (federal) and in Chapter 173-221 WAC (state). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

The following technology-based limits for pH, fecal coliform, BOD₅, and TSS are taken from Chapter 173-221 WAC are:

Table 3: Technology-based Limits.

Parameter	Limit
pH:	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
BOD ₅ (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
Chlorine	Average Monthly Limit = 0.5 mg/L Average Weekly Limit = 0.75 mg/L

The technology-based monthly average limitation for chlorine is derived from standard operating practices. The Water Pollution Control Federation's Chlorination of Wastewater (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/liter chlorine residual is maintained after fifteen minutes of contact time. See also Metcalf and Eddy, Wastewater Engineering, Treatment, Disposal and Reuse, Third Edition, 1991. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/liter chlorine limit on a monthly average basis. According to WAC 173-221-030(11)(b), the corresponding weekly average is 0.75 mg/liter.

The existing permit has a chlorine limit of 7µg/L monthly average and 18µg/L weekly average and the facility is able to comply with it. The proposed permit includes the same limit.

The following technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

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A. BIOCHEMICAL OXYGEN DEMAND (5-DAY)

Monthly effluent mass loadings (lbs/day) were calculated as the maximum monthly design flow (2.0 MGD) x Concentration limit (30 mg/L) x 8.34 (conversion factor) = mass limit 500 lb./day.

Monthly effluent mass loadings (lbs/day) were calculated as the maximum monthly influent design loading (2600 lbs/day) x 0.15 (85% removal) = 390 lbs./day.

The more stringent limit is 390 lbs/day will be used in the permit.

The weekly average effluent mass loading is calculated as 1.5 x (390 lbs/day) monthly loading = 585 lbs/day.

B. TOTAL SUSPENDED SOLIDS

The previous permit based the TSS monthly average effluent limit on the “treatment equivalency to secondary treatment” values for lagoons, 40 CFR, Part 133.105. The effluent TSS concentration limit of 45 mg/L is within the “Alternative Discharge Standards” [WAC 173-221-050(2)]. This is applicable for facilities like Othello wastewater treatment plant that have a design capacity of less than two million gallons per day and use the waste stabilization pond process.

1. Monthly Average: 45 mg/L, 750 Lbs/day

At an average design flow of 2 million gallons per day, the monthly mass limit is calculated to be:

$$\text{Average Design Flow} \times \text{Concentration limit} \times \text{Conversion Factor} = \text{Mass Limit} \\ (2 \text{ MGD}) \times (45 \text{ mg/L}) \times (8.34) = 750 \text{ Lbs/day}$$

2. Weekly Average: 65 mg/L, 1084 Lbs/day

At an average flow of 2 MGD and the Weekly effluent TSS concentration limit 65 mg/L (40 CFR 133.105), the weekly mass limit is calculated to be:

$$(2 \text{ MGD}) \times (65 \text{ mg/L}) \times (8.34) = 1084 \text{ Lbs/day}$$

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

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NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the State of Washington.

ANTIDegradation

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of the receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when receiving waters are of higher quality than the criteria assigned, the existing water quality shall be protected. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

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MIXING ZONES

The Water Quality Standards allow the Department of Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

Because there is limited flow data for Owl Creek, a mixing zone can not be determined for the facility's discharge. Therefore, all discharge limits for the Othello Wastewater Treatment Plant will be end-of-pipe.

DESCRIPTION OF THE RECEIVING WATER

The facility discharges to Owl Creek which is a tributary of Lower Crab Creek. Owl Creek has been given the name or designation "DPE 215" (Drains Potholes East) by the U.S. Bureau of Reclamation. Lower Crab Creek drainage flows south then to the west from the Potholes Reservoir and empties into the Columbia River; about 34 miles west of the Othello treatment plant. The confluence of Owl Creek and Lower Crab Creek is about 10 miles downstream of the plant. Owl Creek and all other tributaries of Crab Creek are designated as Class B. The flow in Owl Creek is believed to be predominantly from ground water infiltration as a result of crop irrigation and surface water runoff. There may be other non-point sources and discrete or point source irrigation return flows.

There are no other nearby point source outfalls. Significant nearby non-point sources of pollutants include surface runoff through and alongside feedlots and pastures. Othello did a receiving water sampling for Owl Creek in the year 2000. The only other monitoring data of the Owl Creek water is taken at the U.S. Bureau of Reclamation sampling site, CBP078, which is about 6 miles downstream of the Othello Wastewater Treatment Plant. There have been no flow measurements for Owl Creek (DPE 215) at the Othello wastewater treatment plant location or at the U.S. Bureau of Reclamation sampling site, CBP078.

Characteristic uses include the following:

water supply (industrial, agricultural); stock watering; fish migration; fish rearing, spawning and harvesting; wildlife habitat; secondary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

Water quality of this class shall meet or exceed the requirements for most uses.

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SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Fecal Coliform	200 organisms/100 mL maximum geometric mean
Dissolved Oxygen	6.5 mg/L minimum
Temperature	21 degrees Celsius maximum or incremental increases above background
pH	6.5 to 8.5 standard units
Turbidity	Less than 10 NTUs above background, when background is 50 NTU or less; or Less than 20% increase when background turbidity is greater than 50 NTU.
Toxics	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

The critical condition for a receiving water is the seven day average low flow with a recurrence interval of ten years (7Q10). There are no flow data available for Owl Creek (DPE 215) thus the proposed permit will include the requirement for receiving water flow measurement at the Othello wastewater treatment plant.

BOD₅-- Critical conditions have not been determined, therefore, the technology-based effluent limitation for BOD₅ was placed in the permit.

Fecal coliform--Critical conditions have not been determined, therefore, the technology-based effluent limitation for fecal coliform bacteria was placed in the permit.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for

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those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

The following toxics were determined to be present in the discharge: Chlorine and ammonia. A reasonable potential analysis was not conducted on these parameters to determine whether or not effluent limitations would be required in this permit.

There are no flow data available for Owl Creek that could be used to determine when the critical condition in this case occurs.

The Permittee may provide data clearly demonstrating the seasonal partitioning of the dissolved metal in the ambient water in relation to an effluent discharge. Metals criteria may be adjusted on a site-specific basis when data is available clearly demonstrating the seasonal partitioning in the ambient water in relation to an effluent discharge.

Metals criteria may also be adjusted using the water effects ratio approach established by USEPA, as generally guided by the procedures in USEPA Water Quality Standards Handbook, December 1983, as supplemented or replaced.

WHOLE EFFLUENT TOXICITY

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

Acute toxicity tests measure mortality as the significant response to the toxicity of the effluent. Dischargers who monitor their wastewater with acute toxicity tests are providing an indication of the potential lethal effect of the effluent to organisms in the receiving environment.

Chronic toxicity tests measure various sublethal toxic responses such as retarded growth or reduced reproduction. Chronic toxicity tests often involve either a complete life cycle test of an organism with an extremely short life cycle or a partial life cycle test on a critical stage of one of a test organism's life cycles. Organism survival is also measured in some chronic toxicity tests.

Accredited WET testing laboratories have the proper WET testing protocols, data requirements, and reporting format. Accredited laboratories are knowledgeable about WET testing and capable of calculating an NOEC, LC₅₀, EC₅₀, IC₂₅, etc. All accredited labs have been provided the most recent version of the Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* which is referenced in the permit. Any Permittee interested in receiving a copy of this publication may call the Ecology Publications Distribution Center 360-407-7472 for a copy. Ecology recommends that Permittees send a copy of the acute or chronic toxicity sections(s) of their permits to their laboratory of choice.

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An effluent characterization for acute and chronic toxicity was conducted during a previous permit term in 1993. The WET tests during effluent characterization indicated that no reasonable potential existed to cause receiving water acute or chronic toxicity. In accordance with WAC 173-205-060, the Permittee must repeat this effluent characterization for the following reasons:

The previous permit issued in 1998 did not require Othello to do a WET test but stated that the permittee will do a WET test in the next permit cycle. Also, in accordance with WAC 173-205-040(1) (g), Othello should run the WET test in conditions that best characterize the potential for ammonia and chlorine residual toxicity. During the past two winters, the effluent ammonia monthly average concentrations recorded in the DMRs have peaked in late fall and early winter. The Othello wastewater treatment plant does not add chlorine for disinfection except during those times that large numbers of migratory waterfowl settle on the lagoons causing an increase in the fecal coliform counts. These high fecal count events usually occur in early spring or late fall.

The permittee will schedule the WET test for a time period during the months of fall, winter or spring in order to get the WET test that best represents a period of higher ammonia and chlorine concentrations in the effluent.

To set the WET test requirements for the Othello plant, Ecology uses a ranking procedure from the Ecology Permit Writer's Manual. The ranking procedure factors in the "Toxicity Likelihood" that Othello:

- Discharges ammonia and chlorine residual in the effluent. These toxic pollutants are listed in 40 CFR Part 122.
- The facility does have known or suspected receiving water impacts.

Next the ranking procedure takes into account:

- Average annual discharge flow volume, and
- Chronic critical effluent concentration at the edge of the mixing zone.

Using this ranking procedure, the Othello Wastewater Treatment Plant rates a "Rank 4" facility classification. The effluent characterization testing requirements for a Rank 4 facility are:

Acute Toxicity: 4/year using 1 fish and 1 invertebrate;

Chronic Toxicity 2/year using 1 fish and 1 invertebrate.

Othello will complete one year of the testing during this permit cycle since the permit cycle is only four years. If toxicity is found, Ecology will issue an Administrative Order requiring the city to investigate in order to reduce or eliminate any source of toxicity.

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HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the applicant's discharge is unlikely to contain chemicals regulated for human health, or does not contain chemicals of concern based on existing data or knowledge. The discharge will be re-evaluated for impacts to human health at the time the next permit is to be issued.

SEDIMENT QUALITY

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The Department has determined that it is likely that the discharge from the facility has no reasonable potential to violate the Sediment Management Standards. If the Department determines in the future that there is a potential for violation of the Sediment Quality Standards, an order will be issued to require the Permittee to demonstrate that either the point of discharge is not an area of deposition or, if the point of discharge is a depositional area, that there is not an accumulation of toxics in the sediments.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

The lagoons at the Othello wastewater treatment plant are unlined, thus they have the potential to impact the groundwater. Because of this potential to discharge to groundwater, the plant has three wells at the site that are monitored. The wells are "upgradient well, #2E", "downgradient well, #2W" and "domestic well, at the treatment plant". The monitoring records from the wells for the past four years (January 1999 through January 2003) show that the pollutant levels in the samples have been well below the groundwater standards with the exception of lead. In four sampling events the lead levels were above the Primary Contaminant Criteria level of 0.05 mg/L. In June, 1999 the wells MW2W, MW2E and Domestic had lead levels measuring 0.07 mg/L. In June, 2000, the well MW2W had a lead level of 0.12 mg/L. Both Domestic and MW2E had lead levels of 0.08 in June 2002. For a list of all sampling results, please refer to the attached DMR data records, Appendix A.

In order to better determine if and how the lagoons may have an impact on groundwater, the monitoring in the lagoons and in the monitoring wells will be modified. The lagoons and the groundwater monitoring wells will be sampled more frequently and for additional parameters, such as anions and cations. A preliminary analysis of the 2000 to 2003 data from the monitoring wells showed an increase in certain parameters - chloride, conductivity, and nitrogen as nitrite

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plus nitrate – from the upgradient well to the downgradient well. The specific monitoring changes are listed below in the “Monitoring Requirements” section.

COMPARISON OF EFFLUENT LIMITS WITH THE EXISTING PERMIT ISSUED IN 1998.

Since there have been no substantive changes in the Othello Wastewater Treatment Plant process, influent loading or effluent pollutant levels, there are no changes proposed for the permit effluent limits from the existing permit.

Existing Limits		Proposed Limits
BOD ₅	30 mg/L, 390 lbs/day (average monthly) 45 mg/L, 750 lbs/day (average weekly)	Same
TSS	45 mg/L, 750 lbs/day (average monthly) 65 mg/L, 1084 lbs/day (average weekly)	Same
Fecal coliform	200/100mL (average monthly) 400/100mL (average weekly)	Same
pH	Daily minimum greater than 6 Daily maximum less than or equal to 9	Same
Chlorine	7 µg/L (average monthly) 18 µg/L (maximum daily)	Same

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Sludge monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (July 1994) for facultative lagoon systems.

In order to better characterize the potential to impact groundwater and effluent, Ecology proposes to change the following monitoring parameters.

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Effluent monitoring changes:

- The permit will require monitoring for alkalinity and hardness to characterize the effluent relative to Owl Creek. The metals sampling regime has been altered to match the EPA list of “Pollutants of Concern”.

Lagoon monitoring changes:

- The permit will no longer require monitoring for TKN, (NO₂ + NO₃), and ammonia. Information from these parameters in the lagoon is not necessary for predicting effluent or groundwater impacts.
- Monitoring for fixed dissolved solids will replace conductivity. Instead of quarterly, the fixed dissolved solids will be sampled twice per permit cycle. This frequency should be adequate to characterize the lagoon dissolved solids regime.
- Monitoring for cations (sodium, potassium, calcium, and magnesium) and anions (bicarbonate, chlorine, and sulfate) will replace chloride sampling. This will give a more accurate accounting for those pollutants that might migrate to groundwater or flow to the effluent. The sampling frequency of twice per permit cycle will be sufficient for these parameters also.

Owl Creek monitoring changes:

- Owl Creek will be monitored during the years 2004, 2005 and 2006.
- Monitoring for flow, fecal coliform, alkalinity and BOD will be added for the above discharge sampling location. A number of potential non-point pollution sources just upstream from the plant make it essential for Othello to collect alkalinity and BOD data to better characterize Owl Creek environmental conditions as it reaches the Othello Wastewater Treatment Plant outfall.

Groundwater monitoring changes:

- The permit will no longer require monitoring for TKN and ammonia.
- The permit will no longer require depth of water monitoring, as the water elevation parameter will supply needed information. The water elevation will be sampled at all wells as well as all piezometers.
- Monitoring for metals will change from annual sampling frequency to twice per permit cycle. In order to match the EPA list of “pollutants of concern” arsenic, mercury, molybdenum, selenium, and silver have been added to the list of metal parameters in the groundwater sampling.
- Monitoring for conductivity and chlorides will be replaced with monitoring for cations, anions and total dissolved solids (TDS).

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LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. The laboratory at the Othello wastewater treatment plant is accredited for: BOD, DO, pH, TSS, chlorine, ammonia, and fecal coliform. Othello uses a contract laboratory (KUO Testing Labs in Othello) for the quarterly, semi-annual and annual testing requirements, including metals testing.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in proposed permit requirement S.4. to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition (S.4.) restricts the amount of flow.

OPERATION AND MAINTENANCE (O&M)

The proposed permit contains condition S.5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems the Permittee is required in permit condition S7. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503, and by Ecology under Chapter 70.95J RCW and Chapter 173-308 WAC. The disposal of other solid waste is under the jurisdiction of the Adams County Health Department.

PRETREATMENT

An industrial user survey is required to determine the extent of compliance of all industrial users of the sanitary sewer and wastewater treatment facility with federal pretreatment regulations (40 CFR Part 403 and Sections 307(b) and 308 of the Clean Water Act), with state regulations

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(Chapter 90.48 RCW and Chapter 173-216 WAC), and with local ordinances. The industrial user survey should be submitted to the Department no later than July 30, 2005.

Federal and State Pretreatment Program Requirements

Under the terms of the addendum to the “Memorandum of Understanding between Washington Department of Ecology and the United States Environmental Protection Agency, Region 10” (1986), the Department of Ecology (Department) has been delegated authority to administer the Pretreatment Program (i.e. act as the Approval Authority for oversight of delegated Publicly Owned Treatment Works (POTWs)). Under this delegation of authority, the Department has exercised the option of issuing wastewater discharge permits for significant industrial users discharging to POTWs which have not been delegated authority to issue wastewater discharge permits.

There are a number of functions required by the Pretreatment Program which the Department is delegating to such POTWs because they are in a better position to implement the requirements (e.g. tracking the number and general nature of industrial dischargers to the sewerage system). The requirements for a Pretreatment Program are contained in Title 40, part 403 of the Code of Federal Regulations. Under the requirements of the Pretreatment Program (40 CFR 403.8(f)(1)(iii)), the Department is required to approve, condition, or deny new discharges or a significant increase in the discharge for existing significant industrial users (SIUs) (40 CFR 403.8 (f)(1)(i)).

The Department is responsible for issuing State Waste Discharge Permits to SIUs and other industrial users of the Permittee's sewer system. Industrial dischargers must obtain these permits from the Department prior to the Permittee accepting the discharge (WAC 173-216-110(5)) (Industries discharging wastewater that is similar in character to domestic wastewater are not required to obtain a permit. Such dischargers should contact the Department to determine if a permit is required.). Industrial dischargers need to apply for a State Waste Discharge Permit sixty days prior to commencing discharge. The conditions contained in the permits will include any applicable conditions for categorical discharges, loading limitations included in contracts with the POTW, and other conditions necessary to assure compliance with State water quality standards and biosolids standards.

The Department requires this POTW to fulfill some of the functions required for the Pretreatment Program in the NPDES permit (e.g. tracking the number and general nature of industrial dischargers to the sewage system). The POTW's NPDES permit will require that all SIUs currently discharging to the POTW be identified and notified of the requirement to apply for a wastewater discharge permit from the Department. None of the obligations imposed on the POTW relieve an industrial or commercial discharger of its primary responsibility for obtaining a wastewater discharge permit (if required), including submittal of engineering reports prior to construction or modification of facilities (40 CFR 403.12(j) and WAC 173-216-070 and WAC 173-240-110, et seq.).

Wastewater Permit Required

RCW 90.48 and WAC 173-216-040 require SIUs to obtain a permit prior to discharge of industrial waste to the Permittee's sewerage system. This provision prohibits the POTW from

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accepting industrial wastewater from any such dischargers without authorization from the Department.

Requirements for Routine Identification and Reporting of Industrial Users

The NPDES permit requires non-delegated POTWs to "take continuous, routine measures to identify all existing, new, and proposed SIUs and potential significant industrial users (PSIUs) discharging to the Permittee's sewerage system". Examples of such routine measures include regular review of business tax licenses for existing businesses and review of water billing records and existing connection authorization records. System maintenance personnel can also be diligent during performance of their jobs in identifying and reporting as-yet unidentified industrial dischargers. Local newspapers, telephone directories, and word-of-mouth can also be important sources of information regarding new or existing discharges. The POTW is required to notify an industrial discharger, in writing, of their responsibilities regarding application for a State waste discharge permit and to send a copy of the written notification to the Department. The Department will then take steps to solicit a State waste discharge permit application.

Requirements for Performing an Industrial User Survey

This POTW has the potential to serve significant industrial or commercial users and is required to perform an Industrial User Survey. The goal of this survey is to develop a list of SIUs and PSIUs, and of equal importance, to provide sufficient information about industries which discharge to the POTW, to determine which of them require issuance of State waste discharge permits or other regulatory controls. An Industrial User Survey is an important part of the regulatory process used to prevent interference with treatment processes at the POTW and to prevent the exceedance of water quality standards. The Industrial User Survey also can be used to contribute to the maintenance of sludge quality, so that sludge can be a useful biosolids product rather than an expensive waste problem. An Industrial User Survey is a rigorous method for identifying existing, new, and proposed significant industrial users and potential significant industrial users. A complete listing of methodologies is available in the Department of Ecology guidance document entitled "Conducting an Industrial User Survey".

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

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RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. The Department proposes that this permit be issued for four years, expiring on June 30, 2008, to bring it into the correct basin year for the Mid-Columbia Basin watershed cycle.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Metcalf and Eddy.

1991. Wastewater Engineering, Treatment, Disposal, and Reuse. Third Edition.

Stevens, Thompson & Runyan, Engineers.

1976. Sewerage Systems Facilities Plan for the City of Othello.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

Laws and Regulations(<http://www.ecy.wa.gov/laws-rules/index.html>)

Permit and Wastewater Related Information
(<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

Water Pollution Control Federation.

1976. Chlorination of Wastewater.

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(E2). (Cited in EPA 1985 op.cit.)

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to issue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on October 4 and October 11, 2001 in the Othello Outlook to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on September 30, 2004, in the Othello Outlook to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Eastern Regional Office
4601 North Monroe Street
Spokane, WA 99205-1295

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (509) 329-3567, or by writing to the address listed above.

This permit and the fact sheet were written by Patrick McGuire.

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

AKART-- An acronym for “all known, available, and reasonable methods of prevention, control, and treatment”.

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

Average Weekly Discharge Limitation -- The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD₅--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

CBOD₅ – The quantity of oxygen utilized by a mixed population of microorganisms acting on the nutrients in the sample in an aerobic oxidation for five days at a controlled temperature of 20 degrees Celcius, with an inhibitory agent added to prevent the oxidation of nitrogen compounds. The method for determining CBOD₅ is given in 40 CFR Part 136.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

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Chronic Toxicity--The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring --Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

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Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User-- A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

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Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in State regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

Pass through -- A discharge which exits the POTW into waters of the-State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

- a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;
- b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)--

- 1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;
- 2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

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Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C--TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at (<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

APPENDIX D--RESPONSE TO COMMENTS